RIVER CONDITIONS.

The Rio Grande and the Rio Pecos were at flood stage during the month, and special mention of the floods of these streams has been made elsewhere in this summary.

Of the Texas streams the Nueces, San Antonio, and Guadalupe were at low water mark during the month. The Colorado, Brazos, Trinity, Neches, and Sabine had a good flow of water after the first decade, and, although they were falling at the close of the month, they carried a much larger volume of water then than at the beginning of the month. Flood stage was not attained, but the Brazos was nearly bank full on the 18th in the vicinity of Waco. There was an abundance of water in the lower Colorado for the rice that had not reached the stage of maturity and for all other irrigating purposes.

FLOODS OF THE RIO GRANDE AND OF THE RIO PECOS.

By F. H. BRANDENBURG, District Forecaster.

Rio Grande.—The rainfall on the watershed of the Rio Grande in New Mexico, in common with its upper reaches in south-central Colorado, was exceptionally heavy during July. In San Luis Valley, Colorado, rain fell on an average of 17 days, and in amount has rarely been exceeded in July, while near the southern border of Colorado it was the greatest of record. In New Mexico, especially the northern part, the persistence of rain was fully as marked. At Santa Fe the fall was the greatest for July in 35 years, and at El Paso, Tex., the greatest in 30 years. The heavy rainfall was reflected in the Rio Grande and flood stage was maintained in the greater part of its course during the entire month. Naturally the fluctuations in the height of the water were more pronounced than during floods resulting from the melting of snow, the usual cause. In the lower reaches of the river, notably at El Paso, six well-defined crests occurred: On the 7th and 12th, when 17.3 feet was noted; on the 18th, 16.8 feet; on the 21st, the highest stage, 18 feet, occurred. On the 24th and 28th stages of 17 and 16.9 feet, respectively, were noted. The previous highest reading of the El Paso gage is 17.3 feet. Below El Paso the river was reported to have reached the highest stage in 26 years. Notwithstanding timely advices of the different high stages which permitted the taking of steps to minimize the damage, a heavy loss was sustained, principally in the flooding of meadows, breaking of ditches, loss of land by erosion, and destruction of bridges.

Rio Pecos.—On July 21, as a result of rains in northern New Mexico, the Rio Pecos at Santa Rosa was changed from a narrow and shallow stream to a river 9 feet deep and 250 feet wide. Three days later and about the time of the arrival of this upstream flood at Carlsbad, a general rain set in on the watershed. Over a large area north, east, and west of Carlsbad the fall was heavy, and in localities torrential. At Carlsbad 3.75 inches fell in five hours. During the night of the 25th the highest stage was reached, but the exact height was not reported. On the morning of the 26th the river was 14 feet deep and 300 feet wide. At Barstow, Tex., on the 28th, a stage of 17.6 feet was reached, or only 2.4 feet lower than the memorable flood of October 5, 1904. Information is not available as to the extent and amount of damage.

A VIOLENT LOCAL STORM AT ABILENE, TEX.

By W. H. GREEN, Assistant Observer.

A disastrous thunder and hail storm occurred at this station on the 31st, moving from north to south. The strip damaged by hail is about 10 miles long and about 2 miles wide, beginning about 8 or 9 miles north of Abilene and ending about 1½ miles south of the city. The afternoon preceding the storm was warm and sultry, with a maximum temperature of 98° about 3.30 p. m., and southerly winds of 14 to 18 miles per hour. At 5.48 p. m. the wind shifted from south to southeast, and to northeast by 5.51 p. m., suddenly increasing to a velocity of over 50 miles per hour in about 10 minutes. The temperature dropped from 96° at 5.30 p. m. to 54° at 6.05 p. m., and in the next 15 minutes the pressure increased 0.19 inch. At 6.14 p. m. the wind shifted back through east to southeast, reaching a maximum velocity of 60 miles per hour from the southeast from 6.16 to 6.21 p. m.

Rain began at 6 p. m. and ended at 8.10 p. m., falling at an excessive rate from 6.06 to 7.16 p. m. Practically 3.50 inches, including hail, fell within one hour. Hail varying in size from half an inch to an inch and a quarter in diameter fell from 6.10 to 7 p. m. The hail, with the assistance of the force of the wind, knocked out practically all unprotected window lights in Abilene on the east side of buildings, except in the extreme west part of town, where the hailstones were much smaller than in other sections, while quite a number of window lights on the north and south sides and also those on the east side protected with screens were broken. Several dozen frail buildings were blown off their foundations, a few completely blown down, and two or three destroyed by lightning.

One young man, Vernon Milner, about 25 years old, was killed, being in a barn that was demolished by the wind. Another man, named Cunningham, was blown into Lytle Lake, an artificial reservoir for the city's water supply, and seriously wounded.

There is no evidence of a whirl or gyratory motion of the wind, and the station records show that the wind has reached as high a velocity before this several times, and on two occasions slightly higher, yet the damage from the wind and hail together was probably greater than on any previous occasion. It is believed that $150,000 is a conservative estimate of the amount of damages in Abilene and vicinity. The damage to the Weather Bureau building and apparatus was comparatively light.